ABSTRACT

Title: Neurological deficit after focal cerebral ischemia in rats – pharmacological intervention

Objectives: The goal of the thesis was to determine the effect of 7-nitroindazole, a selective inhibitor of neuronal nitric oxide synthase, after focal ischemic stroke in rats.

Methods: Twenty adult male Wistar rats were used in this experiment. The rats were randomly divided into four groups: ischemic stroke was given to half of them, the rest were sham operated. 10 animals were given 7-nitroindazole (25mg/kg) to protect neuronal ischemic brain damage. After a few weeks the rats were tested with a set of behavioral tests: Ladder rung walking test, Bar holding test, Rotarod test and Open field test. To evaluate the volume of brain damage the stereotactic method was used. The brain sections were cut and compared with atlas. This study was supported by Institute of Physiology, Academy of Sciences ČR in Prague.

Results: The present results show that the 7-nitroindazole has no side effects on healthy rats. The long-term effect on rats after ischemic stroke was not proved. There were a few positive trends observed such as an increase of locomotor speed, increased explorative behaviour and better coordination outcome on RotaRod. On the other hand the brain tissue damage was bigger and the time of hanging in Bar Holding test was shorter.

Keywords: acute stroke, ischemia, 7-nitroindazole, neuroprotection, NOS inhibitors